DOCUMENT RESUME

ED 159 391	08	**CE 017 449**

TITLE	Implementing Performance-Based Vocational Education Utilizing V-TECS Catalogs. Module 9. Using V-TECS Catalogs in Contemporary Programs to Make Them More Performance Based.
INSTITUTION	Clemson Univ., S.C. Vocational Education Media Center.; South Carolina State Dept. of Education, Columbia. Office of Vocational Education.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C.
PUB DATE	78
GRANT	G007702222
NOTE	45p.; For related documents see CE 017 440-448
AVAILABLE FROM	Vocational Education Media Center, 10 Tillman Hall, Clemson University, Clemson, South Carolina 29631 ($7.50)
EDRS PRICE	MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS	Administrator Education; Catalogs; Inservice Teacher Education; Learning Modules; *Performance Based Education; *Program Improvement; *Program Validation; *Vocational Education
IDENTIFIERS	Vocational Technical Education Consortium States

ABSTRACT

This learning module on using Vocational-Technical Education Consortium of States (V-TECS) catalogs in contemporary programs to make them more performance based is one of nine developed for use in training administrators, teachers, and prospective teachers in the utilization of V-TECS catalogs. Readings are provided on the use of V-TECS catalogs of performance objectives, criterion-referenced measures, and performance guides to validate the effectiveness of present vocational programs, to build and revise them, or to better manage them. Examples of module behavioral objectives are these: identify procedures for validating a contemporary program for job relevance using V-TECS catalogs; critical steps used when building a vocational program; and devices useful in assessing student abilities. A glossary of terms, a glossary self check, and self checks following each reading are provided. (An instructor's handbook--CE 017 449--for use with all the modules contains the checkout activity for this module, a multiple choice test keyed to the behavior objectives stated at the beginning of the module. The modules are designed for use with individuals or with groups.) (JH)

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ED159391

Implementing Performance-Based Vocational Education
Utilizing V-TECS Catalogs

MODULE 9

USING V-TECS CATALOGS IN CONTEMPORARY PROGRAMS TO MAKE THEM MORE PERFORMANCE BASED

Produced by

State Department of Education
Office of Vocational Education
Columbia, South Carolina 29201

In cooperation with

Vocational Education Media Center
Clemson University
Clemson, South Carolina 29631

1978

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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CE 017 449

These materials have been developed from funds
provided by grant G007702222 under the
Vocational Education Act of 1963 P.L. 88-210 as Amended
Department of Health, Education and Welfare, Office of Education

INTRODUCTION

The demand for accountability in terms of job relevancy has led to an increased interest in task-based vocational education. Instruction, however, cannot be truly job relevant or task based unless valid information describing the work performed is available. In the past, such information was difficult to obtain. Now that such information is available in the form of catalogs of performance objectives, criterion-referenced measures, and performance guides through the efforts of the Vocational-Technical Education Consortium of States (V-TECS), the opportunity exists to validate the effectiveness of our present vocational programs and modify such programs, if needed, using V-TECS Catalogs.

This module is designed to acquaint vocational educators with the use of V-TECS catalogs as an aid in validating, building and revising, and managing contemporary programs to make them more performance based.

DIRECTIONS

Modules 1 and 2 should be completed before beginning work on this module.

Read the OBJECTIVE. If you think you can accomplish these objectives now, turn to the CHECK-OUT ACTIVITY, page 39, and follow the instructions.

If you feel you are not able to accomplish these objectives now, look at the LEARNING ACTIVITIES on this page. Begin the learning activities and as soon as you feel you are ready, turn to the CHECK-OUT ACTIVITY, page 39, and follow the instructions.

OBJECTIVES

Given instructional materials developed for this module, the participant will be able, with 100 percent accuracy, to select on a multiple choice test:

1. Procedures for validating a contemporary program for job relevance using V-TECS catalogs.
2. Aspects of program accountability provided by a V-TECS catalog.
3. Critical steps used when building a vocational program.
4. Appropriate attitudinal teaching approaches using V-TECS catalogs.
5. Resource materials provided by V-TECS catalogs.
6. Use of V-TECS catalogs by counselors and other teachers.
7. Use of modules in a contemporary program.
8. Devices useful in assessing student abilities.
9. Purpose of peer teaching.
10. Major types of in-class methods that are considered when managing a contemporary program.
11. Three appropriate records that may be used when keeping records in a contemporary program.

LEARNING ACTIVITIES

1. READ the Glossary of Terms for Module Nine. Check your knowledge of the terms by completing Self-Check I. Compare your responses with the Self-Check Answer Key.
2. READ Section I, Validating a Contemporary Program Using V-TECS Catalogs.
3. CHECK YOUR KNOWLEDGE by completing Self-Check II, Cross-Reference Table.
4. READ Section II, Building and Revising a Contemporary Program Using V-TECS Catalogs.
5. CHECK YOUR KNOWLEDGE by completing Self-Check III, Identifying Prerequisite Skills.
6. READ Section III, Managing a Contemporary Program Using the V-TECS Catalogs.
7. ARRANGE with your instructor to complete this module by going through the Check-Out Activity.

GLOSSARY OF TERMS – MODULE 9

Advisory Committee - a group of individuals who assist in the design or revision of a program based on their collective experiences.

Cross-reference table – a table in a V-TECS catalog that identifies the relationship among duties and tasks found in the occupational inventory and the performance objectives in the final catalog. Also noted are time spent indices on all tasks by D.O.T. codes.

D.O.T. (Dictionary of Occupational Titles) Codes – a nine digit number used to identify a specific job within a group of related jobs.

Domain – a group of related job titles.

Peer Teaching – a method of instruction in which a student who has completed training acts as an instructor to another student.

Stanine Values – used in a cross-reference table to identify the percentage of time spent on a particular task. Values range from 9 (most amount of time spent) to 1 (least amount of time spent).

Task Criticality – the characteristic of a task statement which makes its accomplishment crucial to an acceptable performance on the job.

Task Difficulty – the degree of simplicity or complexity of a task.

SELF-CHECK I

GLOSSARY

Directions: Match the following terms and definitions. Record your answers on a separate sheet of paper.

DEFINITIONS

1. – a 9 digit number used to identify a specific job within a group of related jobs.
2. – identifies the relationship among duties and tasks found in the occupational inventory and the performance objectives in the final catalog. Also noted are time spent indices on all tasks by D.O.T. codes.
3. – a group of related job titles.
4. – identify the percentage of time spent on a particular task. Values range from 9 (most amount of time spent) to 1 (least amount of time spent).
5. – the degree of simplicity or complexity of a task.
6. – individuals who assist in the design or revision of a program.
7. – the characteristic of a task statement which makes its accomplishment crucial to an acceptable performance on the job.
8. – a method of instruction whereby a student assumes the role of teacher.

TERMS

a. Domain

b. D.O.T. Code

c. Cross-reference table

d. Stanine Values

e. Advisory Committee

f. Task Criticality

g. Task Difficulty

h. Peer Teaching

Answer Key

1. b, 2. c, 3. a, 4. d, 5. g, 6. e, 7. f, 8. h

SECTION I

VALIDATING A CONTEMPORARY PROGRAM USING V-TECS CATALOGS

Job-Relevant Tasks (V-TECS catalogs)

V-TECS catalogs can be used by vocational instructors to determine if their current instructional programs are job relevant. This can be accomplished by looking at the tasks workers say they perform on the job and comparing these task-based objectives with the objectives he/she is using in his/her current program.

One way to do this is to secure the V-TECS catalog(s) which relate to the course you are now teaching. Secure a list of the objectives covered in your current instructional program. This list may be in the form of a curriculum guide or units with daily lesson plans which identify your instructional objectives.

Compare objectives found in the catalog(s) with those in your current program. As you identify objectives in the catalog which are not currently included, analyze these from the standpoint of local occupational requirements. If the tasks are relevant to the entry level skills expected of your students, you may wish to incorporate these in your program. If you are currently incorporating tasks which are not included in the catalogs, analyze them from the standpoint of current local job requirements. Perhaps you can eliminate instructional areas that are no longer required or have become outdated for the job for which you are training students.

Time-Spent Index

If you are faced with more objectives than you can include in a program, perhaps the cross-reference table located in the appendix of each catalog can be helpful in decision making.

The cross-reference table is designed to aid instructors in adapting objectives to individual programs. Objectives are listed by cumulative numbers. An important aspect of this table is the information relative to the task time-spent index. (The task time-spent index is an index of relative time spent on each task within a domain of interest and appearing on a task list. The task time-spent index is computed from scientifically selected samples of incumbent workers who respond to a task listing in an occupational inventory booklet.) The task time-spent index appears in the cross-reference table in the form of stanine values. Values are given by Dictionary of Occupational Title Code (D.O.T.). A D.O.T. Code is a number used to identify a specific job within a cluster of related jobs. The stanine values indicate the relative amount of time the survey participants spent performing the tasks. The stanine is a rating scale. Stanine values range from 9 (most amount of time spent) to 1 (least amount of time spent). Percentages of tasks which correspond to each stanine value are as follows:

Cumulative % of Total Tasks	Stanine Values
4.0 (Upper)	9
7.0	8
12.0	7
17.0	6
20.0 (Middle)	5
17.0	4
12.0	3
7.0	2
4.0 (Lower)	1
Total % 100.00	

In the example which follows, "Cross-Reference Table of Tasks and Performance Objectives, Timber Harvesting," the task numbers as they appeared by duty groups in the original occupational inventory are listed. In this example, tasks 1 through 17a for Duty A are listed. The next column, Performance Objective Cumulative No., indicates the performance objective number as the objective is numbered in the final catalog. In the next column, Time-Spent Index (Stanine Values), the relative time spent for each job title in performing each task is given. Each job title corresponds to a particular D.O.T. reference code. As you study the example you will note the column for D. O. T. No. 1 reveals the relative time spent by Woods Laborer in performing tasks 1 through 17a. The column titled D.O.T. 2 lists the relative time spent by Logging Contractor in performing tasks 1 through 17a. The column titled D.O.T. 3 lists the relative amount of time spent by Logging Foreman in

performing tasks 1 through 17a. Thus, you can look at the table and compare relative time spent by workers within each job title. Look at task 17a. Notice that relative time spent (stanine value) for Woods Laborer is 7, Logging Contractor 6, and Logging foreman 5. This tells you that, relatively speaking, Woods Laborers said they spent more time performing the task than did Logging Contractors or Logging Foremen.

EXAMPLE 1

CROSS–REFERENCE TABLE OF TASKS AND PERFORMANCE OBJECTIVES
TIMBER HARVESTING

Project Code: 1788
O.E. Code: 01.0703

D.O.T. Numbers	Job Titles
940884042	Woods Laborer (1)
183168030	Logging Contractor (2)
183168044	Logging Foreman (3)

TABLE OF PERFORMANCE OBJECTIVES AMONG D.O.T.'s

Duty	Task Number	Performance Objective Cumulative No.	Time-Spent Index (Stanine Value) Woods Laborer D.O.T. No. 1	Logging Contractor D.O.T. No. 2	Logging Foreman D.O.T. No. 3
A	1*		7	8	6
	2	1		5	
	3(See A-23) **		4	3	4
	4	2		3	3
	5*			3	2
	6(See C-8) **		4	6	6
	7(See A-23) **		4	6	6
	8*		3	2	3
	9	3	5	3	3
	10	4	5	4	5
	11*		3	3	4
	12*		2	3	4
	13	5		5	5
	14	6		4	5
	15	7		5	5
	16a	8		6	3
	16b	9		6	3
	17a	10	7	6	5

Indicates a Performance Objective was not written for this task. Therefore, no additional information was generated (i.e., A-1).

**Indicates tasks that were combined to generate a Performance Objective i.e., A-3 and A-7 were combined with A-23 to generate a Performance Objective.

Task Difficulty

As you noticed, there were tasks listed in the cross-reference tables for which performance objectives were not written. This could be due to the fact that few workers reported performing the task. Or, some tasks may be so simple that they do not merit training. An example of such a task might be "sweep floor." A task may also be considered "perishable." This means that a student may easily forget the task before he/she ever has an opportunity to perform it. The task difficulty is determined by each teacher; the decision to keep or delete a task is best made based on information you acquire from local industry or business. Their requirements may "make or break" a task.

Task Criticality is another factor with which you as an instructor must reckon.

Task criticality is a characteristic of a task statement which makes its accomplishment crucial to the acceptable performance of a worker or student. Further, task criticality is a method of analysis which identifies the critical tasks and aids in determining the consequence of poor performance or lack of performance by a worker or student.

Suppose that Task 121 "Check chlorine lines for leaks" is well below the cut-off point for your program. However failure to detect a chlorine leak would certainly endanger lives, a risk that we cannot afford to take. Consequently, each task below the cut-off point must be reviewed and the question asked: "What will be the result of a worker's not being able to perform upon demand?"

If the answer involves loss of life, serious injury, or damage to costly equipment because there is no time to train immediately upon demand, then the performance objective for that task should be included.

As another example, an objective should be included in a medical technician's program that prepares the student to perform external heart massage, even though figures show he/she is unlikely to do the task very often. This is vital because should a situation arise when the student must perform a "life-or-death" external heart massage, there would be no time to train him/her. [1]

The final decision rests with you as an instructor. The cross-reference table is merely an aid and not the final answer to the problem of tasks to be included in an instructional course.

Providing Accountability For Occupational Courses

Catalogs of performance objectives, criterion-referenced measures, and performance guides are a useful tool for vocational instructors and directors in supporting local program content and expenditures. These catalogs actually document the tasks workers say they perform on the job. Therefore, catalogs are one of the most valid bases for supporting occupational training available to vocational educators.

In addition, catalogs can be used as an instrument for communicating between programs of different levels and locations. Student records indicating whether or not the student has performed selected tasks can be sent, upon the student's request, to other training centers. Ascertainment of individual skill development eliminates loss of student time in retraining for tasks he/she can already perform.

Placement Aid

Upon graduation, a student record may be used to articulate higher education skills. The student record serves as an informative "calling card" for employers and assists placement because employers may be matched to appropriate workers who have met the necessary requirements of their organization.

Need For Follow-up

Schools (you and your administration) are held responsible for the success of their students. Your students can be easily measured against the performance objectives of your course that mirror the community needs.

Follow-up studies reveal the product performance and overall effectiveness of your student and your program over the short and long term.

[1] V-TECS, *Technical Reference Handbook* (Atlanta: Southern Association of Colleges & Schools, 1976), pp. 8-9.

For example, does the amount of time spent learning a task justify its use? As you raise questions, decide if the inputs of your program – teaching process, modules, equipment, tools, and resources – are justified by your products (students). If not, serious revisions are needed. Negative feedback can improve a program. Feedback can indicate weaknesses as well as strengths. Constant adaption, however, is needed to continue meeting the changing needs of your community and students. Use follow-up studies to revise your programs, your approach, and your classroom.

Revising a Program

Once placement is made and follow-up studies are conducted, revising may begin. Compare students' performance on the job to the performance skills taught in your classroom. Are they similar? Are adjustments, deletions, or additions needed? Are students performing at an acceptable level? Are unique tools and equipment used or unused?

Compare your program to the job skills required in your community. Have standards, technology, or methods changed? Are students successful? Are attitudes, performance and cognitive skills appropriate? If the answer is "no," revisions in your programs are needed.

SELF-CHECK II

THE CROSS-REFERENCE TABLE

Directions: Following is a portion of a cross-reference table for home furnishings worker. Imagine you are an instructor for an occupational course titled Drapery Seamstress. You do not have adequate time in your course to include instruction for all 15 performance objectives listed in the table below. You need to eliminate 4 objectives. Based on relative time spend (stanine values) which 4 objectives would you eliminate for Drapery Seamstress? (Remember, the cross reference table does not take into account task criticality nor task difficulty. Your decision will be based on relative time spent only.)

CROSS-REFERENCE TABLE OF TASKS AND PERFORMANCE OBJECTIVES

Project Code 14–56
O.E. Code 09.0204

D.O.T. 1	299.488–010	Drapery Estimator
D.O.T. 2	299.381–014	Drapery Measureperson
D.O.T. 3	780.381–026	Home Furnishing Aide
D.O.T. 4	787.782–086	Drapery Worker
D.O.T. 5	785.381–250	Drapery Seamstress

TABLE OF PERFORMANCE OBJECTIVES

Performance Objective	Drapery Estimator	Drapery Measureperson	Home Furnishing Aide	Drapery Worker	Drapery Seamstress
1	9	8	4	4	3
2	9	8	4	4	3
3	9	7	5	6	5
4	9	7	4	4	4
5	3	3	7	5	7
6	4	5	3	1	2
7	6	6	6	7	6
8	3	4	7	6	9
9	2	3	6	4	5
10	2	2	5	4	6
11	2	2	3	4	3
12	6	5	7	8	9
13	7	7	7	9	9
14	7	7	9	9	7
15	7	7	7	9	9

Answer Key

SELF-CHECK II

If objectives must be eliminated based on relative time spent by workers performing the job, Objectives 1, 2, 6, and 11 would be eliminated based on their low stanine values.

SECTION II

BUILDING AND REVISING A CONTEMPORARY PROGRAM

Utilizing V-TECS Catalogs With Advisory Committees

V-TECS catalogs are a useful tool for working with craft and/or advisory committees when designing a new course or evaluating and updating an already existing instructional program. Catalogs provide a valid and reliable source of job-relevant course content that administrators, instructors, and committee members may utilize to validate a current or prospective instructional program. First, the catalogs are broken out into separate and distinct tasks which are descriptive of actual work performances as they occur on the job. Secondly, committees are normally composed of incumbent workers and supervisors from a selected occupational area common to the instructional program.

Such individuals are generally knowledgeable of what is required of workers to function in the occupational area they represent. In addition, they are usually aware of the training that is necessary to meet the demands of changing technology in their field.

Craft or advisory members may not know how to teach; yet, each should be able to identify tasks within a catalog that are performed within the occupational area of their community. In addition, the group should be able to determine, on the basis of their collective experience and the cross-reference data, the relative importance of each task that is performed, whether or not certain tasks should be taught at all, and the depth of instruction that should result for those tasks that should be taught. If properly managed, substantial input can be obtained from members of these committees. This input can have a significant impact on current instructional programs as well as aiding in the building of a new occupational course. In addition, the committees may provide information relative to sources of needed supplies, and potential employment sites for students, as well as students enrolling in new programs. The catalog presents an organized information base from which to draw that input. [2]

[2] *A Summary of V-TECS Catalog Uses for Teachers and Administrators* (Jackson, Mississippi: State Department of Education, 1936), pp. 2–3.

Steps for Building a Vocational Course

The following steps summarize procedures which may be useful to vocational instructors in course building, utilizing V-TECS catalogs. The suggested steps were taken from the Mississippi publication, *A Summary of V-TECS Catalog Uses For Teachers and Administrators*, and should result in a more performance-based program.

1. Select catalog(s) applicable to areas of instruction.
2. Review catalog contents.
   a. Instructor
   b. Advisory or Craft Committee
   c. Administrators
   d. Ex-students
   e. Parents
   f. Employers
3. Select tasks to be taught.
4. Review and refine selections in terms of:
   a. Equipment
   b. Supplies
   c. Students
   d. Facilities
   e. Instructional Time
5. Group related tasks (as they occur on the job).
6. Arrange selected tasks and task groups into some suitable teaching order, e.g.,
   a. Easy to difficult
   b. Prerequisite order
7. Refine sequence arrangement.
8. Address the following questions:
   a. What information will students need to have in order to perform the selected tasks?
   b. What content needs to be taught other than selected tasks and related information, e.g., safety, care of tools and equipment, club activities?
9. Review available information and identify curriculum/instructional materials that relate to selected tasks, task groups, and other non-catalog topics. (Step 8b)
10. Extract related information and mesh with appropriate tasks and non-catalog topics.

11. Arrange related information in a suitable manner on a task-by-task or topic basis, leaving the task sequence (Step 7) undisturbed.
12. Identify gaps or deficiencies in task and topic supportive information.
13. Begin source searches for deficient information (once located, repeat steps 9 and 10).
14. Package tasks and related information materials in a manner that retains the sequence and provides access, utility, and protection (e.g., 3-ring notebook binder).
15. Address the following question: What activities can be planned and developed that will allow, as much as possible, student performance of identified tasks?
16. Plan, develop, and schedule teaching/learning activities.
17. Conduct teaching/learning activities.
18. Evaluate content and methodology.
19. Revise materials as dictated by evaluation and experience. [3]

Using Lists of Equipment and Tools

An important part of each occupational survey booklet is the tool and equipment list. Incumbent workers who are surveyed identify the tools and equipment used in their current occupation. Thus, the final revision of each catalog contains a tool and equipment list which accompanies frequency-of-use data for the related occupations included in the catalog.

Check the catalog(s) in your occupational area. Use the list as a checklist for your own laboratory. In addition, you may find this tool and equipment list can be useful in developing and validating tool and equipment lists and budgets for personnel in the local, district, and state office of vocational education.

Following are sample tool and equipment lists taken from V-TECS catalogs. Review Example 2. Which piece of equipment is used the most by an alterationist?

[3] Ibid, pp. 8-9.

EXAMPLE 2

ALTERATIONIST

Equipment Description	Percentage of Members Using	Number of Members Using
Tailor's Thimble	32.23	39
Eyelet Puncher and Setter	31.40	38
Clothes Steamer, Hand	29.75	36
Conveyor and Pressboard	29.75	36
Cutting Board	29.75	36
Pressurized Steam Iron	29.75	36
Pressing Sleeve Roll	28.93	35
Thread Clippers	28.93	35
Ruler, 18 Inch	27.27	33
Dry Iron	26.45	32
Shears, Tailor's	23.97	29
Molds for Covering Buttons	23.14	28
Press Roll	19.83	24
Pants Seam Board	19.01	23
Zipper Repair Kit	19.01	23
Tailor's Press Board	17.36	21
Sleeve Mitt	16.53	20
Automatic Hem Gauge	15.70	19
Tailor's Ham	11.57	14
Curved Rule	10.74	13
Magnifying Glass	10.74	13
Shears, Electric	10.74	13
Machine, Serger or Overedger	9.92	12
Needle Board	9.92	12
Tailor's Square	9.92	12
Bobbin Repair Kit	9.09	11
Bobbin	9.09	11
Point and Seam Presser	9.09	11
Dressmaker's Dummy	8.26	10
Embroidery Hoop	8.26	10
Model Form	8.26	10
Point Turner	8.26	10
Pounding Block or Clapper	8.26	10
Dressmaker's Ruler, Transparent	7.44	9
Pads for Dummy	6.61	8
Waistband Measuring Stick	6.61	8
Skirt Board	5.79	7
Upperarm Rule	4.96	6
Press Card	4.13	5
Needle Guard	3.31	4
Gripper Kit	2.48	3
Machine, Zig Zag	2.48	3
Ruler, 6 Inches	2.48	3
Cleaning Gun for Spots	1.65	2
Commercial Bagger	1.65	2
Hammer	1.65	2
Hem Clips for Leather and Vinyl	1.65	2
Thread Rack	1.65	2
Whisk Broom	1.65	2
Leather Punch	0.83	1

Equipment Description	Percentage of Members Using	Number of Members Using
Machine Light	0.83	1
Pin Jar – Magnetized	0.83	1

TOTAL RESPONDENTS 121

If you looked at Example 2 carefully, you found that "tailor's thimble" was the piece of equipment used by the greatest number of alterationists. Of the 121 respondents in the study, 39 reported using the thimble.

The following example, Example 3, illustrates equipment and tools used by small engine repair technicians.

EXAMPLE 3

EQUIPMENT AND TOOLS

SOUTHERN ASSOCIATION OF COLLEGES AND SCHOOLS
COMMISSION ON OCCUPATIONAL EDUCATION INSTITUTIONS
VOCATIONAL-TECHNICAL EDUCATION CONSORTIUM OF STATES

EQUIPMENT BY PERCENTAGE RATING

PROJECT No. 2133 SURVEY DATA ANALYSIS
OCCUPATIONAL INVENTORY FOR SMALL ENGINE REPAIR

EQUIPMENT DESCRIPTION	PERCENTAGE OF MEMBERS USING	NUMBER OF MEMBERS USING
GREASE GUN	100.00	118.
HACKSAW	100.00	118.
WRENCHES, ALLEN	100.00	118.
CHISEL, COLD	99.15	117.
FEELER GAUGES	99.15	117.
WRENCH, SPARK PLUG	99.15	117.
AIR COMPRESSOR	98.31	116.
DRILL, PORTABLE	98.31	116.
HAMMER, BALL PEEN	98.31	116.
SCREWDRIVERS (STANDARD ASSORTED)	98.31	116.
SCREWDRIVERS (PHILLIPS ASSORTED)	98.31	116.
WRENCHES, BOX END (ASSORTED)	98.31	116.
WRENCHES, OPEN END (ASSORTED)	98.31	116.
WRENCHES, SOCKET 1/4 " DRIVE	98.31	116.
PLIERS (ASSORTED)	97.46	115.
PLIERS, VISE GRIP	97.46	115.
PUNCHES (ASSORTED)	97.46	115.
WRENCHES, ADJUSTABLE	97.46	115.
WRENCHES, SOCKET 3/8" DRIVE	97.46	115.
BRUSH, WIRE	96.61	115.
FILES (ASSORTED)	96.61	114.
PISTON RING COMPRESSOR	96.61	114.
SCREWDRIVERS, CARBURETOR JET	96.61	114.
BATTERY, JUMPER CABLES	94.92	112.
WRENCHES, SOCKET 1/2" DRIVE	94.92	112.
BATTERY CHARGER	94.07	111.
BEARING PULLER	94.07	111.
SOLDERING IRON	94.07	111.
VISE, MACHINIST	94.07	111.
FLY-WHEEL PULLER	93.22	110.
RETAINING RING PLIERS-CONVERTIBLE TYPE	93.22	110.
GRINDER WITH WIRE BRUSH	91.53	108.
TAP AND DIE SET	90.68	107.
WRENCHES, IGNITION	88.14	104.

Identifying Resource Materials

V-TECS catalogs provide vocational instructors with two lists of occupational references. One list of references identifies sources used to cite standards of the performance objectives. Following is an example of such a list prepared for the V-TECS catalog of Performance Criterion-Reference Measures and Performance Guides for Alterationist.

EXAMPLE 4

REFERENCES FOR STANDARDS

1. Writing Team, State of Alabama; gleaned from germane literature and experience in the field.
2. Burns, Marjorie Arch and Bishop, Edna Bryte. *Super Sewing.* New York: J. B. Lippincott Company, 1974.
3. *Clothing Repairs.* Home and Garden Bulletin No. 107. Washington, D.C.: U.S. Department of Agriculture, Superintendent of Documents, U.S. Government Printing Office, 1970.
4. Johnson, Mary. *Guide to Altering and Restyling Ready-Made Clothes.* New York: E.P. Dutton and Company, Inc., 1964.
5. Perry, Patricia (Ed.) *Ready Set Sew.* New York: Butterick Fashion Marketing Company, 1971.
6. Perry, Patricia (Ed.) *The Vogue Sewing Book.* New York: Vogue Patterns, 1970.
7. *Sew You're An Alterationist.* Mississippi State, Mississippi: Research and Curriculum Unit for Vocational and Technical Education, College of Education, Mississippi State University, 1974.

A second list consists of reference materials identified as a helpful source in developing performance guides. The reference identified in either list can be acquired and used to provide supportive information for teaching and learning activities. Either of these lists would be helpful in building a listing of resource materials for student and/or teacher use.

EXAMPLE 5

STATE-OF-THE-ART LITERATURE

A Project for The Development of An Interstate Consortium for The Production of Performance Objectives and Criterion Measures in Occupational Education. Tallahassee, Florida: Educational Research and Development Program, Florida State Department of Education, January, 1973.

Buerkel, Elaine and Rehling, Joseph H. *An Analysis of The Alteration Specialist Occupation.* Columbus, Ohio: Ohio State University, 1974.

Burns, Marjorie Arch and Bishop, Edna Bryte. *Super Sewing, The New Bishop/Arch Book.* Philadelphia, Penn.: J.B. Lippincott Co., 1974.

Clothing and Home Furnishing Services: A Suggested Guide. Tallahassee, Florida: Division of Vocational-Technical and Adult Education, Home Economics Section, Florida State Department of Education, March, 1969, (VT012230).

Clothing Assistant. Lubbock, Texas: Home Economics Instructional Materials Center, Texas Tech. University, 1969.

Clothing Maintenance Specialist, A Suggested Training Program. Washington, D.C.: U.S. Department of Health, Education and Welfare, Manpower Development and Training Program, U.S. Government Printing Office, 1964.

Clothing Management, Production and Services. Tallahassee, Florida: Division of Vocational-Technical and Adult Education, Florida State Department of Education.

Clothing Repairs, Home and Garden Bulletin No. 107. Washington, D.C.: U.S. Government Printing Office, October, 1965.

Curriculum Guide for Trades and Industries Tailoring Programs. Columbia, South Carolina: South Carolina State Department of Education, 1968.

Dressmaking. Washington, D.C.: Trade and Industrial Education, Public Schools of the District of Columbia, 1964, (VT008421).

Garment Alteration: An Adult Training Course for Selected Occupations in Clothing Services. Albany, New York: Bureau of Continuing Education Curriculum Development, New York State Department of Education and University of the State of New York, 1970.

Home Economics Education Guide for Instruction Preparatory to Entering Clothing Service Occupations. Richmond, Virginia: Department of Vocational Education, Virginia State Department of Education, 1970.

Identification of Tasks in Home Economics Related Occupations, Clothing, Apparel and Textile Services. Des Moines, Iowa: Department of Home Economics, Iowa State University and University of Northern Iowa, 1974.

Jarnow, Jeanette A. and Judelle, Beatrice. *Inside The Fashion Business* (2nd Ed.) New York: Wiley and Sons, Inc., 1974.

McDermott, Irene E. and Norris, Jeanne L. *Opportunities in Clothing.* Peoria, Illinois: Chas. A. Bennett Co., Inc., 1968.

Outline for Occupational Home Economics Course in Commercial Sewing and Alterations. Montgomery, Alabama: Alabama State Department of Education, 1966.

Poulin, Clarence. *Garment Altering and Repairing and Tailor Shop Management.* Penacook, New Hampshire: Clarence Poulin, Publisher, 87 High Street, 03301, 1967.

Poulin, Clarence. *Supplementary Lessons in Women's and Men's Suit Tailoring.* Penacook, New Hampshire: Clarence Poulin, Publisher, 87 High Street, 1970.

Poulin, Clarence. *Tailoring Suits The Professional Way.* Peoria, Illinois: Chas. A. Bennett Co., Inc., 1973.

Report of Planning Grant for The Establishment of A Center for The Development of Home Economics Instructional Materials. Lubbock, Texas: Texas Technological College, 1967, (ED019470).

Schwebke, Phyllis W. *How to Tailor.* Milwaukee, Wisconsin: The Bruce Publishing Company, 1960.

Schubert, Genevieve W. *Alteration Woman (Ladies' Ready-to-Wear).* Milwaukee, Wisconsin: The Vocational Technical and Adult School.

"Sew" You're An Alterationist. Jackson, Mississippi: Mississippi State University, Vocational and Technical Education, State Department of Education, 1974.

"The Unitrol System for Women's Alteration Rooms and Men's Bushelling Rooms." Chicago, Illinois: G. J. Marder and Associates, Inc., 2804 Belmont Avenue, 60618.

Walcoff, Charles. *Industrial Needle Trades.* New Brunswick, New Jersey: Vocational-Technical Curriculum Laboratory, Rutgers University, 1968.

Wyllie, Ethel. *Today's Custom Tailoring.* Peoria, Illinois: Chas. A. Bennett Co., Inc., 1971.

Identifying Subordinate Student Skills

V-TECS catalogs are a useful tool for you, the vocational instructor, to use in providing counselors and other teachers with the subordinate student skills required for performing a job-relevant task.

The performance guide developed for a specific task is the key element. Performance guides may be used to identify those prerequisites required of students entering the program. Minimum reading ability, the ability to discriminate between colors, physical requirements—these are a few examples of prerequisites which the learner should possess prior to engaging in learning a particular task. This can be accomplished by selecting those tasks which are included in an instructional course. Next, analyze the performance guides so that a composite picture might be developed which adequately describes prerequisites. Counselors (or whoever screens and assigns students to particular classes) will be able to do a far better job with such information. Such common problems as getting color-blind electricians and non-reading parts clerks might be considerably reduced with such analysis.

In order to design a program that will meet a student's needs totally, you must confer with other teachers who also work with your students. You may assist other teachers and counselors by providing them with an indepth analysis of the kinds of academic skills that are necessary to successfully complete an occupational skill. This supplemental information will help in coordinating your students' instruction and thus insure a total learning program.

Let's look at one example of the types of information which we should make available to counselors and others.

TASK: Gas Weld Cast Iron

Performance Guide:

1. Select safety equipment.
2. Clean and prepare joints.
3. Select flux and filler rod.
4. Turn on and adjust for neutral flame.
5. Preheat workpiece as required.
6. Weld workpiece.
7. Clean and check weld.

Study Example 6 to determine what additional math, science, and communications skills are needed to perform the above task.

(TASK STATEMENT) I–D OXY/ACETYL WELD CAST IRON [4]

TOOLS, EQUIPMENT, MATERIALS, OBJECTS ACTED UPON	PERFORMANCE KNOWLEDGE	SAFETY – HAZARD
Oxy-Acetylene Welding Equipment S.T. as needed Cast Iron Filler Rod Cast Iron Material Flux	Determine type joint preparation Determine filler rod size Determine tip size Determine necessity of preheat/postheat Select flux Complete weld according to proper procedure	Refer to Index under Safe Practice X – Safety Precautions for Hand Tools [Items 1 thru 10] XIX – OXY – Acetylene Welding – [Items 1 thru 35]

DECISIONS	CUES	ERRORS
Determine joint preparation Determine filler rod size Determine tip size Determine necessity of preheat/postheat Determine flux Complete weld according to correct procedure.	Job requirement, condition of metal Determine by parent metal thickness Weight and design of casting. A procedure necessity. Visual and specification. Porosity, poor quality weld	Porosity, poor quality weld Poor quality, hard spots in weld Poor fusion, porosity, lack of penetration. Uneven expansion and contraction, possible cracking condition. Poor fusion, porosity, hard spots in weld.

[4] Alex L. Pucci and George F. Reichel, *An Analysis of The Welding Occupation*, (Columbus, Ohio State University, 1975), pp. 8-9.

(TASK STATEMENT) I–D OXY/ACETYL WELD CAST IRON

SCIENCE	MATH – NUMBER SYSTEMS
Simple machines used to gain mechanical advantage. Effect of heating and cooling on expansion of materials. Fluids under pressure. Transfer of heat from one body to another Arrangement of molecules, atoms and ions and the effect on structure and strength of materials. Resistance of materials to change in shape.	Set of Real Numbers – Positive Rationals Fundamental Operations (Calculation) Addition algorithm Subtraction algorithm Multiplication algorithm Division algorithm Order of operations, i.e., Use of parentheses in simplifying arithmetic expressions. Basic Measurement Skills and Concepts Instruments – [Basic Measurement] Measurement: Geometric Linear Reading and interpreting tables, charts, and graphs Scale drawings floor plans/blueprints Basic Arithmetic Skills and Concepts Ratio and Proportion [Amount of preheat needed in relation to the weight and design of casting]

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EXAMPLE 6 (cont'd.)

COMMUNICATIONS		
PERFORMANCE MODES	EXAMPLES	SKILLS/CONCEPTS
Speaking	Make oral requisition for materials	Terminology, Logic Gesture, Usage
Reading	Read preheat and postheat temperatures as noted in written or oral instructions	Comprehension, Detail, Proposals, Description, Terminology, Instruction
Writing	Interpret blueprint and written specifications	Sketch, Description, Logic, Concentration, Note taking
Listening	Make written requisitions for materials needed	Visual analysis, Logic Discrimination, Detail, Recognition of symbols, Codes, etc.
Viewing	Follow oral instructions	Size, Shape, Temperature
Touching	Examine finished weld	

Designing Attitudinal Approaches Using V-TECS Catalogs

Vocational instructors should recognize that one of the primary reasons individuals lose their jobs is due to poor job-related attitudes rather than their inability to perform psychomotor skills required by the occupation. Thus, the need for building attitudinal approaches in our instruction cannot be over emphasized.

Let's look at the following example which illustrates the analysis of motor, intellectual and attitudinal skills for the task, "Make Cakes."

EXAMPLE 7

Analysis of motor, intellectual and attitudinal skills for the task, "Make Cakes," might look something like this:

TASK: Make Cakes

Performance Skills	Cognitive Skills	Affective Skills
1. Measure ingredients.	1. Identify ingredients and purpose of each in cake baking.	1. Demonstrate sanitary food handling practices.
2. Sift ingredients.	2. Identify measuring equipment for dry and liquid ingredients.	2. Demonstrate safety in using electrical appliances.
3. Mix ingredients.	3. Identify type of cake based on type of fat used.	3. Demonstrate proper care of tools and equipment.
4. Judge quality by sight and taste.	4. Identify baking equipment.	
	5. Identify temperature control.	

The attitudinal skills may be built in the instructional process in a number of ways. For example, basic food sanitation cuts across almost every unit in an occupational food services course. Therefore, an entire unit can be taught on the principles of food sanitation. In addition, the application of these principles could be included in the instruction when appropriate throughout the course. For example, as the students are actually making cakes, sanitary food practice including an attitude of caring about the customer's health and safety can be interwoven with cake baking.

Case situations are effective methods for building attitudinal skills in the instructional design. Following is an example situation:

Case Study

Beth is a ninth grade girl who is slightly overweight. She is well-liked by her classmates. She is always well groomed and attractively dressed. However, she is often so tired and hungry by 5th period (period after lunch) that she isn't as interested and doesn't listen as well as she does in her other classes. Her parents prepare breakfast before going to work at the plant, and encourage the family to eat. Beth says she has time only for a cup of coffee and "besides," she says, "it makes me sick to eat more."

Suggested Questions for Discussion:

1. Why does Beth skip breakfast?
2. Are there other reasons that she might have that are not expressed?
3. Is Beth wise to go to school without breakfast?
4. Is skipping breakfast a good way to reduce weight?
5. Do you think there is any relationship between going without breakfast and feeling tired and not interested?
6. Have you ever skipped breakfast?
7. Let's think about your reasons. Are they different from Beth's?
8. Have you always not eaten breakfast?
9. Why do you think you stopped eating breakfast?

Using Modules as an Aid in Contemporary Programs

Modules developed for job-relevant tasks identified in V-TECS catalogs afford the teacher a useful vehicle for assisting students by providing enrichment or supplementary learning activities.

Learning experiences designed for the fast learner may best be incorporated into a module. Material relevant to the content currently being studied but which goes into the subject at a greater depth, may offer another approach to providing enrichment activity via the study of a broader aspect of the subject content. Also, an individualized module may offer a student in a group-based program this opportunity.

Supplementary (or corrective) learning activities presented in module form provide learning opportunities for students who are having difficulty mastering an objective. Modules offer the student an opportunity to study similar content but in a different form. For example, audio tapes and slides may be used if the student has failed to master a learning experience because of poor reading ability. If the student is having real difficulty, similar content presented at a lower instructional level could be presented in module form.

Modules are an effective method for the teacher to employ when students are absent and need to make up work.

Modules aid in managing resources such as equipment and facilities. For example, in a learning station, while a student is studying the steps to follow when inserting a zipper, another student may be stitching up a garment on a machine. Modules, then, can be an effective vehicle for providing enrichment and supplementary learning activities as well as aiding in the management of classroom resources.

SELF-CHECK III

Directions: Following is a page taken from a V-TECS catalog of performance objectives, criterion-reference measures, and performance guides. Identify the prerequisite skills, knowledges and attitudes. Draw a form similar to the one below for your responses. Please do not write on this module.

Duty: Performing Cash Register Duties

Task: Prepare cash drawer for daily business

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5. Performance Objective

Given a cash drawer, change fund and a change fund receipt form, prepare the cash drawer for business. All the steps on the instructor's checklist must be completed acceptably.

Criterion-Referenced Measure

Go to the cash drawer and with the change fund and change fund receipt form provided by your instructor, prepare the cash drawer for business.

Performance Guide

1. Count money received.
2. Fill out and sign receipt form showing amounts of each denomination and total amount of cash received.
3. Place change fund into appropriate sections in cash drawer.

PREREQUISITE SKILLS, KNOWLEDGES AND ATTITUDES

TASK: Prepare cash drawer for daily business.

PERFORMANCE	COGNITIVE	ATTITUDES

SELF-CHECK III

Answer Key

PREREQUISITE SKILLS, KNOWLEDGES AND ATTITUDES

TASK: Prepare cash drawer for daily business.

Performance	Cognitive	Attitudes
Count coins and bills. Write receipt. Place money in drawer.	Identify denominations of coins and bills. Identify receipt form Identify sections of cash drawer.	Demonstrate honesty in handling money.

SECTION III

MANAGING CONTEMPORARY PROGRAMS

Identifying Abilities of Prospective Students

There is a need for vocational instructors to determine the abilities of their students before they enroll in a particular instructional program. This topic has been lightly touched on in several modules but there is a need for some further explanation at this point.

The V–TECS catalog(s) relevant to your particular course provides an excellent resource for you if you prepare your own testing devices. The relevant catalogs can also be most useful in evaluating assessment devices which may be commercially prepared or prepared by other instructors in your occupational area. The duty groups which identify the major areas of work within an occupation may serve as an outline for your test development. Random tasks which make up a duty group may be selected for performance, written, or oral testing.

Through the use of the duty areas and task lists, you are assured that you are assessing the job-relevant abilities students possess before entering your course.

The following assessment techniques are offered merely as suggestions and are representative rather than comprising a complete listing.

Commercially Prepared Tests. A number of commercially prepared standardized tests are available to help determine general aptitude, level of career awareness, and occupational interest. Such tests for the most part are very general and are usually too limited to indicate the student's level of knowledge and skill for a particular program such as auto mechanics, industrial sewing or cashier-teller. For specific information, it may be necessary to develop specific tests. Some packaged instructional systems already include within each unit a pretest or several post-tests, any of which could be used as tests for student placement.

Performance Tests. Having students perform activities to reveal the extent of their skills is a possibility. Such testing should be representative of what the student must know to enter a particular program, what skills the student already possesses, and what skills should be demonstrable upon graduation from the program. Although testing of performance is a good method of evaluation, it can be time consuming.

Oral Testing. A quick way to evaluate students is simply to talk to them in a friendly, casual manner. With very little effort a teacher can learn a great deal through this method. Talking to the student at a work station is effective. From this conversation the instructor may be able to determine the student's desires, needs, expectations, attitudes, and, to some extent, the scope of his/her knowledge.

Review of Existing Performance Records. Another method of learning about the student is to check past records. These records might consist of previous school grades, health records, and work experiences. Some instructors, however, feel that knowledge obtained this way might affect or bias their current evaluation of the student. [5]

[5] "Assessing Entering Competence," *Florida V-TECS Participant Activity Guide* (State of Florida, Department of State, 1976), p. 62.

Acquainting Students With Task-Based Vocational Education

Acquainting students with what is expected of them in a task-based, job-relevant vocational education course begins with an explanation of these expectations in the students' language. This can be accomplished through a group discussion, the use of visuals, role play, a slide tape program or any number of methods. Let's look at questions and possible comments you might consider discussing with your students.

1. What is a performance or skill?

   A performance or skill is the capability of a student and/or worker to accomplish a task. The task is accomplished under certain conditions and must meet certain standards. To become capable in performing a task, a student must master complex abilities such as thinking logically, organizing work, and appreciating work.

2. How are job skills and classroom skills related?

   The skills you are teaching students are based on the skills required to perform the tasks workers say they do on the job. This list of tasks or performances was validated by asking workers employed in the occupation exactly what they do. Then, the list of tasks was used to develop a catalog of performance objectives, criterion-referenced measures, and performance guides on which job-relevant vocational courses are built.

3. What is meant by task mastery?

   Since the tasks which are being taught in the course are tasks which employers expect students to be able to do, students will want to learn to perform the tasks in class. To help instructors and students know when they are competent, a standard is included in each objective which describes the degree of skill the student must attain. Further, a criterion-referenced measure which is based on the objective, describes what the students must do and under what conditions they must do it in order to prove that they have mastered the task. [6]

A task-based, job relevant vocational course, then, is based on these concepts:

1. Instruction is based on job-relevant tasks.

2. Students are told (in advance) exactly what they will be given, what the task is and how well they will be expected to perform the task. (In other words, objectives are stated in behavioral, measurable or observable terms.)

3. The final test is always the performance or mastery of the task.

There is nothing new or dramatic about these concepts; as a matter of fact, many, if not most, vocational teachers are already using these practices to some degree.

[6] "Instruction Sheet I," *Orienting Students to Competency-Based Individualized Instruction Module IE–11* (Lexington, Kentucky: State Department of Education), pp. 1-2.

Managing Resources

A plan for managing resources is a must for most vocational programs. Few, if any, programs have adequate facilities for students to perform the same task at the same time thus, a technique for utilizing available resources is needed. V-TECS catalogs can be a useful tool for providing you with a base upon which to plan and organize instruction.

Catalogs are broken out into separate and distinct activities (tasks). These tasks are grouped by duty areas which represent major work areas. This organization makes planning less difficult. You, the vocational instructor, may select the tasks and the mode of instruction to make the most efficient use of available time and equipment. An index of tasks by duty areas is located in the appendix of V-TECS catalogs. Following are examples which illustrate how the task list can be used in managing instruction.

EXAMPLE 8

ALTERATIONIST

TASKS BY DUTY AREAS	Direct Purposeful Experience	Simulated Experience	Role Play	Dramatization	Demonstration	Field Trip	ETV/Motion Picture	Slide/Audio Tape	Lecture	Small Group
Performing Supervisory Functions										
Brief New Employee on Procedures			✓							
Schedule Work Assignments									✓	
Order Equipment and/or Supplies		✓								
Fitting Garments										
Add Thread Marks				✓						
Baste to Fit				✓						
Chalk to Fit				✓						
Pin to Fit				✓						
Level Hemline				✓						
Altering Coats and Linings										
Fit Shoulder Pads							✓			
Add Shoulder Pads							✓			
Remove Shoulder Pads							✓			
Alter Width of Coat Back				✓						
Shorten Vest	✓									
Lengthen Coat	✓									
Shorten Coat					✓					
Replace Lining										✓
Narrow Lapels				✓						

As you see in this case, a variety of methods were used. Providing direct, purposeful learning experiences for students is a great challenge. In the preceding example, students will be given purposeful experiences in lengthening and shortening garments. Part of the activity requires the use of a machine while the remainder of the work can be done at the student's seat. The instructor knows the number of machines available and the number of students needing a machine. Everyone will not be ready for the equipment at the same time, since there will be a variety of fabrics and garments to alter plus variable speeds at which students work. By analyzing the task for the facilities and equipment required ahead of time, the instructor can set up a schedule for the use of various pieces of equipment required for the tasks so that there is organization and not confusion.

Following is an example taken from a V-TECS small engine repair catalog. Again, the task listing is useful as a planning tool.

An additional benefit for vocational instructors who plan their programs around V-TECS tasks is that performance objectives have been written for these job-relevant tasks. The format for these performance behavioral objectives is the Mager format.[7] The objective consists of three parts: the condition, the performance (behavior), and the standard (criterion). Vocational instructors may wish to use the performance objectives in appropriate occupational areas. Additionally, you may wish to evaluate objectives you have written and improve your own objectives so that they are correctly stated.

[7] Robert F. Mager, *Measuring Instructional Intent*, (Belmont, California: Fearon Publishers, 1973).

EXAMPLE 9

SMALL ENGINE TASKS BY DUTY AREAS	Direct Purposeful Experience	Simulated Experience	Role Play Dramatization	Demonstration	Field Trip	ETV/Motion Picture	Slide/Audio Tape	Lecture	Small Group
Inspect and Clean Water Pump				✓					
Select Gear Lubricant							✓		
Replace Electric Shift		✓							
Replace Water pump		✓							
Install Motor on Boat				✓					
Repair Steering Mechanism				✓					

Developing Improved Student Evaluation Tools

V–TECS catalogs of performance objectives, criterion-referenced measures, and performance guides provide instructors of vocational courses with a sound base for developing evaluating devices.

As you review the V-TECS catalog(s) relevant to your occupational cluster, you will find the performance objectives are of two types. The objectives describe either a process, a product or both. As was mentioned earlier in module 6, evaluation based on product, if one is available, is far less time consuming. Further, process evaluation was recommended primarily when there was no end product or when interim steps were critical.

The standards specified in the performance objectives may take a variety of forms. First, a standard may include a description of what the product should look like, e.g., "The area where the collar was removed must lie flat and fit customer."

Or, a standard may describe what a product must not look like, e.g., "The altered dress must fit customer and show no sign of alteration on outside."

A standard may specify a degree of accuracy, e.g., "The valves must be ground to within ± .001 of the manufacturer's specifications."

In some cases, you will find time limits imposed, e.g., "The task must be completed within 10% of the time stated in a flat rate manual."

For some performances, the standard may be the content of the finished product. For example, "The report must contain all information required by the manufacturer such that reimbursement is received."

In many cases, the standard specifies a performance, e.g., "The coil must be replaced such that the spark produced will jump a gap recommended by the manufacturer."

For some performance objectives there are steps in the performance which are critical. In a case such as this, an instructor's checklist with critical checkpoints may be developed. An example follows.

EXAMPLE 10

Task: Install rear-main oil seals

Criterion-Referenced Measure:

Your instructor will provide you with a tractor, a mechanic's tool set, a torque wrench, a new gasket, a seal and a checklist. Install rear-main oil seal. The new seal will be correctly placed and will hold oil. Other parts will be correctly placed and tightened. All items must receive an acceptable rating on the checklist.

COMBINATION CHECKLIST
(Process/Product)

ACTIVITY	RATING ACCEPTABLE	UNACCEPTABLE
1. Removed oil pan and cleaned same.	☐	☐
2. Removed all traces of oil pan gasket from block.	☐	☐
3. Removed rear main bearing cap.	☐	☐
4. Loosened other main bearings to allow crankshaft to drop slightly.	☐	☐
* 5. Pulled out old seal.	☐	☐
* 6. Lubricated top half of new seal and put in place	☐	☐
7. Coated outside of new seal with sealing compound and put in place in rear main cap. Took care not to get compound on lip of seal.	☐	☐
8. Lubricated lip of seal with engine oil.	☐	☐
* 9. Put rear main cap (with seal) in place.	☐	☐
*10. Torqued main bearings.	☐	☐
11. Reinstalled oil pan with new gasket and sealing compound.	☐	☐

*Have instructor check your work before proceeding.

Remember, the Instructor's Checklist is a supplementary aid to the performance objective standards, and may be used when the specified product or process is highly subjective. Keep in mind, however, that a checklist should be used only when absolutely necessary because of the administrative burden checklists place upon you, the instructor.

The following guidelines are suggested as an aid in writing checklists when they can be justified as a part or all of the standard.

General Rule

Do not copy the performance guide for use as a checklist. The performance guide contains all major steps and substeps required for performance of the task. Checklists should address only those elements requiring observation and evaluation.

For Processes

- Determine the critical element which must be rated.
- Write each element into a past tense statement so that the rater can make a did/did not observation. Example: "Greeted customer with Good morning/Good afternoon. May I help you."

For Products

- Determine the critical steps which must be rated.
- For each critical step write a complete past tense statement. Example: "Gave proper breathing instructions to patient."
- For each major step write a past tense statement describing the product. Example: "Roots were fully extended."
- For each critical safety precaution write a past tense statement. Example: "Emergency brakes were applied." [7]

Instructor checklists are used for evaluating the student at the conclusion of task performance. This evaluation may be referred to as summative evaluation. As instructors, however, we frequently need an interim type evaluation to let us know how the student is progressing and how our instructional system is functioning. Student self-checks are helpful in this evaluation phase which may be referred to as formative evaluation. Formative evaluation is made while instruction is taking place so that instruction may be adjusted to meet the needs of the students. Examples of student self-checks follow:

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[7] *Developing Performance Objectives and Criterion-Referenced Measures for Performance-Based Instruction in Vocational Education* (Montgomery, Alabama: State Department of Education, 1977), p. 43.

EXAMPLE 11*

Student Self-Check II

ORDERING, RECEIVING, AND STORING

Identify the following by writing the correct word in the blank provided.

1. A list of equipment and supplies on hand is called an _____ .
2. A list of items packed in one unit is called _____ .
3. A statement of purchases including the unit price, the total price and the shipping charges is called an_____ .
4. A list of the number of units shipped is an order and the cost of shipping is a _____ .
5. A request for additional supplies and materials is called a _____ .
6. An authorized request for additional supplies is called a_____ .
7. A form to be filled out in case of damages is called a _____ .
8. The person or company who sells supplies or products of any kind is called a_____ .

*Courtesy of Bureau of Vocational Education, State Department of Education and Department of Vocational Education, College of Education, University of Kentucky.

Correct responses:
(1) Inventory, (2) Packing slip, (3) Invoice, (4) Shipping order, (5) Requisition, (6) Purchase order, (7) Damage claim, (8) Vendor

EXAMPLE 12

STUDENT SELF-CHECK

On a plain sheet of paper number from 1 – 11 and put the following steps in order according to the way they should be performed by the bank teller when cashing checks. When you have completed this activity, refer to the bottom of the page and check your answers.

a. Complete the Cash-Out Ticket in duplicate.

b. Pull larger bills from the drawer or stack first and count the currency as it is taken from the drawer.

c. Dispense coins.

d. Run a total twice on the adding machine when cashing more than one check from the customer.

e. Save the tape showing the total of a batch of checks.

f. Place the original of the Cash-Out Ticket on top of the checks and keep them for the Proof Department.

g. Stamp the teller number on the face of each check.

h. Keep the duplicate copy of the Cash-Out Ticket and the tape showing the total of a batch of checks for balancing at the end of the day.

i. Examine each check for points of negotiability.

j. List the amount of each check when cashing more than one check for a customer and get a total on the adding machine.

k. Count out the currency slowly to the customer so that the customer may count with the teller.

SELF-CHECK

Answer Key

1. i, 2. j, 3. d, 4. e, 5. c, 6. b, 7. k, 8. g, 9. a, 10. f, 11. h

Providing Opportunities for Peer Teaching

A "motto" with which most, if not all, vocational educators are familiar is "we learn by doing." Research backs up this statement. For example, people generally remember 20 percent of what they hear, 30 percent of what they see, 50 percent of what they hear and see, and 90 percent of what they say as they do a thing.

Vocational instructors can provide opportunities for students to teach others and also teach themselves. This can be accomplished in a number of ways such as allowing students to give demonstrations on a student-to-student basis or student-to-class basis. Each opportunity of this type helps the student to teach himself/herself as well as teach others.

V-TECS catalogs of performance objectives, criterion-referenced measures and performance guides in your occupational area provide a base for the development of methods and/or materials for peer teaching. The performance guide provides an excellent point from which you may work with students in making decisions about the type of demonstration or presentation which might be needed by other students in order to help them master a task. An analysis of the performance guide for a particular task can help you help a peer teacher in making the following decisions:

1. Type of demonstration or presentation suitable
2. The main points to be taught
3. The sequence for teaching
4. Critical points needing additional emphasis
5. Calculating time required for demonstration/instruction
6. Equipment and supplies needed
7. Work area required
8. Anticipating time(s) for questions

If a student is serving as a tutor, in a one-on-one situation, the performance guide will be helpful to him/her in (1) identifying materials and equipment required for instruction, (2) identifying space required and (3) planning the tutoring session.

In teaching a skill or concept to another student, the peer teacher must think through the process and carefully analyze it. A student who does this successfully gains in a number of ways. First, the student learns how to learn and how to organize and manage his/her own learning. Secondly, the student reinforces his/her current knowledge.

Using students as tutors, demonstrators, or instructors is not a procedure to provide free time for teachers, nor just a method to help slower or less advanced individuals. The student who tutors, demonstrates, or instructs receives the greatest benefit. For this reason, tutoring should not be limited to your most advanced students. Students who learn slowly, but once master a task, frequently are more patient and understanding with a peer who is having problems mastering the concept than one who has not experienced difficulty. Remember, you, the vocational instructor, have the final responsibility for the planning and operation of the peer-teaching experience.

Peer teachers or student aides in a classroom provide a humanistic approach to the learning process. Peer teaching fosters a cooperative atmosphere. This strategy changes the classroom from a competitive win/lose situation to a participative, cooperative learning atmosphere.[8]

[8] *Direct Students in Instructing Other Students* (Columbus, Ohio: The Ohio State University, 1974), pp. 9-17.

Using Charts and Individual Records

One technique used successfully by instructors as a motivational tool as well as a record keeping device is the wall chart. Such charts are used to summarize the tasks completed by a student in a particular program. Typically, the task or objective is listed across the top of a chart, and the students are listed down the left side. When a student masters a task, it is "checked off" by the instructor.

Individual progress charts have been used successfully by consumer and homemaking teachers. These charts list the competencies to be achieved and columns for checking off the quarter in which the student mastered each competency.

A student progress sheet can be helpful to instructors in monitoring the progress of each student in the class. This sheet lists the task or objective numbers and columns for recording the dates the student started, repeated, and completed an objective.

The competency evaluation record is designed to provide space for recording the task or objective number, the date started and the date ended. In addition there is space for recording achievement of the standard, scores on written and attitudinal evaluation devices, and a column for recording the final grade.

Upon completion of a course, a student may be given a personal skills record which summarizes his/her progress upon completing a program. Following you will find examples of group and individual record keeping devices.

WALL CHART OF STUDENT PROGRESS

Course: Tractor Mechanics

STUDENT NAME	Adjust clutch free play	Service a dry clutch	Service a shoe clutch	Service a magnetic clutch	Service an overrunning clutch	Service a wet clutch	Change hydraulic filters	Clean & flush hydraulic system	Drain & refill hydraulic system	Maintain hydraulic cylinders	Operate hydraulic tester													

INDIVIDUALIZED PROGRESS CHARTS FOR CONSUMER AND HOMEMAKING EDUCATION COURSES

Suggested Use of Charts

Duplicate an adequate number of charts so that each student will have a copy. The student will be responsible for keeping an individual chart up-to-date. The charts may be filed in the classroom where they will be readily accessible to the students and teacher or the charts may be kept in the student's personal school file.

At the beginning of the course, the teacher will identify the skills and/or competencies the student will be expected to achieve for basic and advanced units and semester courses. In some areas alternative skills and competencies are listed. The teacher will identify the number of alternative skills and competencies to be completed by the student. In an effort to relate to needs of individual students, additional competencies and skills may be added. The student selects the alternatives he/she wishes to achieve and may contract with the teacher for the number he/she will attain.

As a skill or competency is attained, the student records the date under the appropriate quarter column.

Student _____

CONSUMER AND HOMEMAKING EDUCATION PROGRESS CHART

Foods and Nutrition Resource Unit
Low Cost Meals

Competencies	Quarter Achieved			
	1	2	3	4
1. List principles of meal planning.				
2. List major differences between the low, medium, and high cost food plans.				
3. Identify three factors affecting food prices.				
4. List three practices a food shopper can follow to improve shopping practices.				
5. Describe the contribution protein makes to health and well being.				
6. Differentiate between complete and incomplete protein.				
7. Given a menu for one day, calculate the total amount of protein for the day and determine if the recommended amount for an individual of your age and sex has been met.				
8. Plan low cost meals. Evaluate meals using a class developed checklist.				
9. List three ways to economize in preparing the main dish.				
10. Plan and prepare a low cost oven meal.				
11. Plan and prepare a low cost meal using a small appliance or the top of the range.				

STUDENT PROGRESS SHEET[9]

NAME	No. 1			No. 2			No. 3		
	S	R	C	S	R	C	S	R	C

S = Date Started
R = Date Repeated
C = Date Completed

[9] "Instruction Sheet VI," *Orienting Students To Competency-Based Individualized Instruction Module IE–11* (Lexington, Kentucky: State Department of Education), p. 2.

COMPETENCY EVALUATION RECORD[10]

Student Name _____ Occupation _____

Beginning Date _____ Ending Date _____

			EVALUATION			
No.	Date Started	Date Ended	Achievement of Standard	Written Tests	Personal Attitudes	Final Grade

[10] "Instruction Sheet VI," *Orienting Students to Competency-Based Individualized Instruction Module IE–11* (Lexington, Kentucky: State Department of Education), p. 4.

Personal Skills Record [11]

PAYING AND RECEIVING BANK TELLER

_____

Name

Certified by _____

Title _____

Date _____

[11] "Instruction Sheet VI," *Orienting Students To Competency-Based Individualized Instruction Module IE–11* (Lexington, Kentucky: State Department of Education), p. 3.

The trainee named on this report has demonstrated competence in the skills checked:

1. [ ] Greeting and Dismissing Customers

Handling Money

2. [ ] Operating the Adding Machine
3. [ ] Counting Currency
4. [ ] Packaging Currency
5. [ ] Counting Coins
6. [ ] Packaging Coins
7. [ ] Using the Telephone

Handling Surplus Money

8. [ ] Handling Counterfeit Money
9. [ ] Handling Unacceptable Money
10. [ ] Handling Excess Currency

Preparing To Open Window

11. [ ] Obtaining Cash
12. [ ] Preparing Cash
13. [ ] Checking Supplies

Teller's Transfers

14. [ ] Preparing Cash Tickets
15. [ ] Buying and Selling Cash
16. [ ] Answering Inquiries

Cashing Checks

17. [ ] Inspecting Identification
18. [ ] Examining Checks
19. [ ] Cashing Checks
20. [ ] Behavior During Robbery

Processing Deposits

21. [ ] Examining and Preparing Deposit Slips
22. [ ] Processing Cash Deposits
23. [ ] Processing Check Deposits
24. [ ] Processing Cash and Check Deposits
25. [ ] Processing Less-Cash Deposits
26. [ ] Processing Night Deposits
27. [ ] Insuring Safekeeping of Money

Special Customer Services

28. [ ] Filling Change and Payroll Requests
29. [ ] Accepting "In-Bank" Payments

CHECK-OUT ACTIVITIES

Inform your instructor that you are ready to be tested. You will be provided with a copy of a multiple choice test and an answer sheet. Record your answers on the answer sheet and return both the test and the answer sheet to the instructor.